



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/796,047	03/10/2004	Takemi Hasegawa	50212-575	2723
7590 McDermott, Will & Emery 600 13th Street, N.W. Washington, DC 20005-3096			EXAMINER HOFFMANN, JOHN M	
			ART UNIT 1791	PAPER NUMBER
			MAIL DATE 03/25/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/796,047

Applicant(s)

HASEGAWA ET AL.

Examiner

John Hoffmann

Art Unit

1791

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 11-21 and 24 is/are pending in the application.
- 4a) Of the above claim(s) 24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/25/2008 has been entered.

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "81" has been used to designate both a towing device and a measuring device in figure 15. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 11-15, 17-19 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "area fraction" (as interpreted in light of the specification) is indefinite as to its meaning. Page line 16, lines 8-11 of the specification deliberately sets forth the definition for the area fraction of the voids. However, page 41 at lines 11 gives another definition in the form of an equation; it is not ratio of the two areas as per the definition on page 16. Examiner understands the page 41 equation yields a useful approximation of the area fraction, but it is not a determination of the actual area fraction of a particular cross section - it is not the ratio as indicated on page 16. To put it another way: one would not be able to reasonably discern what other approximations would or would not read on the present claimed "area fraction".

Claim 11 now recites feedback control of "time for fiber to pass the fiber drawing furnace" and furnace temperature. No where is this described. No where is any example given. The only disclosure of this is at page 40, lines 21-23. However, there are various passages throughout the specification with striking parallels to what is disclosed at page 40, and now claimed: Page 16, lines 21-24 refers to varying the temperature, and "the time length" for the fiber to pass the furnace; the sentence bridging pages 16-17 indicates that one can control the areas by varying the

Art Unit: 1791

temperature and the "time length to heat the preform"; page 17, lines 11-13 refers to feedback control of the temperature and "the time for heating the preform"; page 39, lines 17-26 refers to changing the temperature and the "time length (heating time) for the preform to pass the fiber drawing furnace"; and page 44, lines 6-9 refers to adjusting the temperature and the "heating time of the preform". It would appear to one of ordinary skill that these feedback control all refer back to the same "time", but it is unclear what that is. Moreover, the plain meaning of "pass" is along the lines of "to move in a path so as to approach and continue beyond something." Applicant's fiber never passes the furnace 60. Nor is any structure provided/disclosed which reasonably detects the fiber at one location in/near the furnace, and then detects it when it leaves. Moreover, one of ordinary skill understands that the glass is still soft and is still being formed, when it leaves the furnace. Perhaps it means the time for the entire fiber to leave the furnace, after it first begins heating, this would correspond to the "heating time" (as per page 39, lines 17-26).

Claim 13 is not understood as to what is meant by "a tension during drawings"; it is unclear if it means one tension in each drawing, or that through the course of all the drawings, only one tension needs to be measured, or something else. There is confusing antecedent basis for "drawing" (line 5) and "drawings"; it is unclear if one of the drawings is the drawing of claim 11, and if the drawing of line 5 is one of the drawings of the line 4 "drawings" and/or the drawing of claim 11.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 11-12 and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fajardo WO 00/16141 in view of Turpin 5167684, Bogdahn 6098428 and Harding 4793840.

The invention is disclosed substantially at least at pages 7-8 of Fajardo. Page 1, lines 7-8 indicates the invention is for a fiber that varies in the axial direction, and page 2, lines 7- 22 disclose changing the pore volume and air fill fraction as a design variable. Fajardo does not explicitly disclose "obtaining an area fraction of the plurality of voids", nor the claimed performing of feedback control. However, page 8, lines 11-12 discloses controlling pressure during the drawing.

Since Fajardo teaches to control pore volume and air filling fraction, it would have been obvious to measure, calculate, estimate, or otherwise "obtain" these values, so that one can control them. The disclosure of controlling these variables would immediately imply that one has to measure/obtain their values. The air filling fraction would be an area fraction of the voids. It is deemed that these are different terms for substantially the same ratio. However, even if they are completely different fractions, the present claims fail to define over Fajardo – merely because the broadest reasonable interpretation of "area fraction" appears to encompass any conceivable fraction. This may seem a bizarre finding, since Applicant has clearly and deliberately defined "area fraction" at page 16, lines 8-11 as "the ratio of the total area of the voids to the area of the cross section" which occurs "in the cross-section of a preform or a fiber". It may seem bizarre that the Office finds that the term is much broader than applicant's definition – because applicant has the right to be his own lexicographer. Examiner

Art Unit: 1791

finds that applicant intends a broader scope because, page 41 at line 11 gives another definition in the form of an equation – it is not the ratio of the two areas; it is not the ratio of the two areas as defined on page 16. Examiner understands that the page 41 equation yields a useful estimation, but it is clear that this is not a determination of the an actual area fraction at a specific location. Since approximations read on the claim, it is deemed that any value/fraction can be an approximation – no matter how well/poorly it approximates it. Fajardo's "air filling fraction" is a fraction. One could say it reads on applicant's "area fraction", because it is merely an estimation there of. It does not matter how well or horribly it estimates it. It could even have an error of 5000% and horrible correlation. Since applicant uses an estimation of the fraction, one could use Fajardo's fraction as an estimation.

From MPEP 2144.01 Implicit Disclosure:

"[I]n considering the disclosure of a reference, it is proper to take into account not only specific teachings of the reference but also the inferences which one skilled in the art would reasonably be expected to draw therefrom." *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968).

See also, *In re Fritch*, 972 F.2d 1260, 1264-65, 23 USPQ2d 1780, 1782-83 (Fed. Cir. 1992); *In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir 1985).

Likewise for feedback control: one would immediately envision "feedback control" by immediate inference from Fajardo's discussion of control. If one wants a certain property, in a process, it is necessary to determine whether the process creates the

property, and if not, make adjustments so as to obtain the property. This is feedback control. Turpin is citing to show it is known to control pressure during fiber drawing.

Moreover, Bogdahn teaches a method of drawing hollow fibers (col. 1, lines 24-26) with very high dimensional accuracy (col. 2, lines 64-67). Col. 5, lines 31-47, and all of Bogdahn teaches to create a realistic model of the system. As per col. 5, lines 1-5, Bogdahn teaches calculating the controlled variable. It would have been obvious to use the Bogdahn method for control any of the Fajardo controlled variables – such as the air fill fraction – so as to make the component with the very high dimensional accuracy. Figure 1 of Bogdahn shows feedback control of temperature (see features 13 and 15).

As to the new limitation of feedback control of time for the fiber to pass: as discussed above, there is no discussion as to what this may or may not be. Feedback control of temperature and pressure is readily apparent: temperature and pressure are measured, if they deviate from the set point, then the conditions are automatically adjusted to get the temperature/pressure back to where they belong. But this cannot happen with the time for the fiber to pass: by the time the fiber passes, the process is finished, and there is nothing that can be done to change the time. Therefore the time feedback limitation cannot be reasonably be interpreted in the same manner as the temperature and pressure feedback control

Given that time cannot be controlled and that no explanation is given regarding the time feedback control, Examiner finds that the broadest reasonable interpretation of the limitation is substantially: Any feedback control which directly effects the time for the fiber to pass the furnace. This is met as per Bogdahn's features 21 and 22 which

discloses feed back of velocity. It is noted that velocity is inversely proportional to the time for the process to be completed. Thus even if the above broadest reasonable interpretation is incorrect, it is deemed that Bogdahn's velocity feedback is equivalent to the time control since such are merely inverses of each other.

The rest of the limitations of claim 11 and the limitations of claims 12 and 16-18 are met as previously discussed –in particular as discussed in the 10/25/2007 Office action. That is, even though the exact wording of the claims (especially claims 16-18) was not previously explicitly addressed, the combination of references (as discussed previously and above) would clearly cover the invention of claims 12 and 16-18.

Claims 13 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fajardo WO 00/16141, Turpin 5167684, Bogdahn and Harding as applied to claim 11 and 17 above, and further in view Tateishi 5961681

As discussed in the 10/25/2007 Office action: It would have been obvious to also control/monitor the Fajardo tension, so as to avoid the end effects of the drawing process as taught by Tateishi. See the 10/25/2007 Office action.

Claims 14 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fajardo WO 00/16141, Turpin 5167684, Bogdahn and Harding as applied to claim 11 and 16 above, and further in view of Bennett "Toward practical holey fiber technology: fabrication , splicing , modeling and characterization" and Anthon 6411762.

As discussed in the 10/25/2007 Office action: It would have been obvious to try to make the Fajardo fibers by drilling a block in the desired pattern. See the 10/25/2007 Office action.

Claims 15 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fajardo WO 00/16141 in view of Turpin 5167684, Harding, Bogdahn and Bennett "Toward practical holey fiber technology: fabrication , splicing , modeling and characterization" and Anthon 6411762 as applied to claims 14 and 20 above, and further in view of Onishi 6474108.

As discussed in the 10/25/2007 Office action: It would have been obvious to use the Onishi hole-creation method to create the Onishi holes for the precision that the Onishi process creates. See the 10/25/2007 Office action.

Response to Arguments

Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

It is argued that Fajardo is not aware of the unexpected improvement in suppressing fluctuation in the structure of the preform and temporal fluctuation in the fiber drawing environment. Examiner could find no evidence in the record of unexpected results. Examiner doubts it is possible to show any improved results are truly unexpected. As per Jaeger 3865564, it has been known for decades that it is necessary (col. 1, lines 13-16) to have a fiber with constant diameter along its length for

Art Unit: 1791

low loss. Moreover, uniformity of products and processing conditions is generally desirable in all production processes, be it food, automobiles, printing or any other mass-produced item.

As per MPEP 608.01(a)

The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described, and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

One of ordinary skill would understand that Fajardo needed temperature and rate control – but did not mention it because such is conventional and widely known. Nevertheless, applicant merely asserts that unexpected results were obtained, no evidence, which demonstrates the results are truly unexpected, has been provided.

On page 10 of the response it is argued that the difference between the two discrete measurements would not suggest that the measurement of the area fraction of voids is the same for a fiber or a preform. The rejection is not based on the measurements as being the same. Rather, it is based on one being used as a rough estimate for the other. As set forth in the rejection, Applicant uses an estimate for the area fraction. Therefor the prior art can use an estimate as well. In other words: since applicant's method doesn't use the true ratio, the prior art need not use the true ratio.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208

USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Thus it is not very relevant that Turpin does not disclose a particular limitation.

The argument regarding claim 14 and its broadest reasonable interpretation is moot as that rejection is not presently made.

The arguments regarding 35 USC 102 are moot as no anticipation rejections are maintained.

Applicant correctly points out Examiner failed to set forth a motivation to combine Bogdahn with Fajardo. However the rejection points out that Bogdahn (especially col. 2, lines 60-68) teaches a superior method of control that yields "very high dimensional accuracy". Examiner apologizes for not explicitly stating that this accuracy would motivate one to use the Bogdahn control with the Fajardo process. The rejection now sets forth that motivation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Hoffmann whose telephone number is (571) 272 1191. The examiner can normally be reached on Monday through Friday, 7:00- 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1791

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Hoffmann
Primary Examiner
Art Unit 1791

Jmh

/John Hoffmann/
Primary Examiner, Art Unit 1791